WHAT IS CLAIMED IS:

1. A sintered material, produced by means of a forming or compacting process, optionally a subsequent cleaning step and optionally a subsequent sintering process, comprising, as a pre-sintering composition:

a) pyrogenically produced silicon dioxide which has been compacted to granulates having a tamped density of from 150 g/l to 800 g/l, a granulate particle size of from 10 to 800 μm and a BET surface area of from 10 to 500 m^2/g, or

b) pyrogenically produced silicon dioxide which has been compacted to granulates, having the following physico-chemical data:

mean particle diameter: from 25 to 120 μm,

BET surface area: from 40 to 400 m^2/g,

pore volume: from 0.5 to 2.5 ml/g,

pore distribution: no pores with a diameter < 5 nm, only meso- and macro-pores are present,

pH value: from 3.6 to 8.5,

tamped density: from 220 to 700 g/l.

2. The sintered material according to claim 1, wherein the granulates are processed to the sintered material by means of a process comprising:

a1) preparing a dispersion of granulates having a solids content of from 10 wt.% to 85 wt.%, and a polar or non-polar inorganic or organic liquid;

a2) transferring the dispersion into a form or coating surfaces with the dispersion,

a3) initiating gelling of the dispersion to form a gel-body or gel-body-like coating and drying the gel body or the gel-body-like coating to form a green body or green-body-like coating;

a4) optionally cleaning the green body obtained after the drying operation, or the green-body-like coating, with gaseous substances, such as chlorine or thionyl chloride, at temperatures of from 700° to 1000°C; and

a5) optionally sintering at a temperature of from 1000° to 1800°C, wherein a resulting sintered body or sintered surface is fully dense-sintered or is still partially porous.

3. The sintered material according to claim 1, wherein the granulates are processed to the sintered material by means of a process comprising:

b1) introducing the granulates without aid of a liquid, into a form or application of the granulates to a surface, to provide a formed body or a layer,

b2) optionally, further compacting, wherein the formed body or the layer is pressed under a high external mechanical pressure at atmospheric pressure or at reduced pressure, wherein the formed body obtained after the pressing step, or the compacted coating, can optionally be cleaned with gaseous substances, such as chlorine or thionyl chloride, at temperatures of from 700° to 1000°C and sintered by means of a sintering step at a temperature of from 1000° to 1800°C, wherein a resulting sintered body or sintered surface is fully dense-sintered or is still partially porous.

4. The sintered material according to claim 1, wherein the granulates are processed to the sintered material by means of a process comprising:

applying the granulates to formed bodies or surfaces by thermal or other high-energy processes, in which a solid formed body or a solid coating is obtained and the resulting sintered body or the sintered surface is fully dense-sintered or is still partially porous.

5. Sintered materials according to claim 1, wherein during production thereof, the granulates, by action of thermal, electric or electromagnetic energy, are brought into a predetermined form before or after heating and are then sintered so that a resulting sintered body or sintered surface is fully dense-sintered or is still partially porous, or the granulates are melted partially or completely, and formed before or after heating to solidify in a form or as a coating, and optionally after-treated.

6. A sintered material according to claim 1, comprising a glass that has been sintered to provide a transparent glass body or a transparent glass layer, wherein the sintering takes place within a viscosity range of the glass of from 10^8 to 10^{12} dPas.

7. The sintered material according to claim 1, wherein the sintered material comprises a glass that is at least water-resistant according to hydrolytic class 2.

8. The sintered material according to claim 1, wherein the sintered material comprises a glass and properties of the glass sintered or melted from corresponding finely divided powder particles correspond to properties of a glass having an identical chemical composition that has been produced via a conventional melting process without using the granulates according to claim 1, wherein production of said sintered material requires substantially lower sintering temperatures as compared with the melting temperature required to produce the glass having an identical composition that has been produced via the conventional melting process.

9. A dispersion of granulates according to claim 1, comprising:
solids contents of the granulates according to claim 1 of from 10 wt.% to 85 wt.%, in a dispersion with a polar or non-polar inorganic or organic liquid.

10. A dispersion of granulates according to claim 1, comprising:
solids contents of the granulates according to claim 1 of from 10 wt.% to 85 wt.%, in an aqueous dispersion which has a pH value of from 1 to 6 or a pH value of from 8 to 12 and is adjusted to the corresponding pH value using at least one member selected from the group consisting of organic acids, inorganic acids, organic bases, and inorganic bases.

11. A dispersion of granulates according to claim 1, comprising:
solids contents of the granulates according to claim 1 of from 10 wt.% to 85 wt.%, in an aqueous dispersion which has a pH value of from 1 to 6 or a

pH value of from 8 to 12 and is adjusted to the corresponding pH value using at least one member selected from the group consisting of organic acids, inorganic acids, organic bases and inorganic bases and which contains other additives enabling increased granulate contents and improved dispersibility, which contribute towards steric or ionic stabilization of the dispersion and reduce or prevent settling of solids portions or prevent premature gelling.

12. A dispersion of granulates according to claim 1, comprising:

solids contents of granulates according to claim 1 of from 10 wt.% to 85 wt.%, in an aqueous dispersion which has a pH value of from 1 to 6 or a pH value of from 8 to 12 and is adjusted to the corresponding pH value using organic acids or inorganic acids or organic bases or inorganic bases and which contains additives permitting improved dispersing, gelling, drying, cleaning and sintering of subsequent sintered material.

13. A dispersion of granulates according to claim 1, comprising:

solids contents of granulates according to claim 1 of from 1 wt.% to 75 wt.%, in an aqueous dispersion which has a pH value of from 1 to 6 or a pH value of from 8 to 12 and is adjusted to the corresponding pH value using organic acids or inorganic acids or organic bases or inorganic bases, wherein pyrogenically produced oxides are added to the dispersion in an amount by weight of from 1 to 65 wt.%, and corresponding pyrogenic oxides are added to the dispersion in uncompacted state or after preliminary compaction.

14. A dispersion of granulates according to claim 1, comprising:

solids contents of granulates according to claim 1 of from 1 wt.% to 75 wt.%, in an aqueous dispersion which has a pH value of from 1 to 6 or a pH value of from 8 to 12 and is adjusted to the corresponding pH value using organic acids or inorganic acids or organic bases or inorganic bases and which contains additives permitting improved dispersing, gelling, drying, cleaning and sintering of subsequent sintered material, wherein salts or oxides of a metalloid and/or metal may be added to the dispersion.

15. A process for the production of a sintered material according to claim 1, comprising:

pyrogenically producing silicon dioxide treated by at least one process selected from the group consisting of compacting and granulating, followed by converting into a dispersion, gelling and drying the dispersion to form a green body, optionally cleaning and subsequently sintering the resulting green body.

16. A process for the production of a sintered material according to claim 1, wherein pyrogenically produced silicon dioxide is treated by at least one process selected from the group consisting of compacting and granulating, followed by a process selected from the group consisting of:

a) introducing the granulates without aid of a liquid, into a form or applying the granulates to a surface;

b) applying the granulates to formed bodies or surfaces by thermal or other high-energy processes, in which a solid formed body or a solid coating is obtained and a resulting sintered body or sintered surface is fully dense-sintered or is still partially porous;

c) treating granulates with thermal, electric or electromagnetic energy, either before or after heating, and sintering, whereby a resulting sintered body or sintered surface is fully dense-sintered or is still partially porous; and

d) melting the granulates partially or completely, and forming into a predetermined form before or after heating, solidifying in said form or coating materials therewith, and optionally after-treating.

17. A process for using sintered material according to claim 1, comprising forming glass bodies from said sintered material.

18. A process for using sintered material according to claim 1, comprising coating materials with said sintered material.

19. A process for using sintered material according to claim 1, comprising forming fibrous materials or fibers from said sintered material.

20. A process for using granulates according to claim 1, comprising adding the granulates as reinforcing fillers for glasses, sintered glasses, ceramics, composite materials, metals, polymers, elastomers, lacquers or liquids.

21. A process for using the dispersion according to claim 2, comprising polishing semiconductor materials or electric circuits using said dispersion.

22. A process according to claim 2, wherein the polar or non-polar liquid comprises water, ethanol or aliphatic hydrocrbons.

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